Sequence protocols
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o

5 <110> Prof. Dr. Flügge, Ulf-Ingo

o

o

<120> DNA-sequence coding for a glucose-translocator

10 o

Plasmids, bacteria, yeast and plants containing

o   said transporter

o

15

o

<130> plastidic glucose transporters

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<150> S652952

<151> 1999-06-13

25 <160> 6

<170> PatentIn Ver. 2.1

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Ser Trp Ser Gly Asp Arg Arg Leu Pro Ala Val Asn Pro Cys Ser Val
            20   25   30

cgg atg ccg acg ggc aac gat ggg tgg tgc gcc ggc ctg agg tcg cgg   145
Arg Met Pro Thr Gly Asn Asp Gly Trp Cys Ala Gly Leu Arg Ser Arg
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gcg gcg gat ctc gcc ggc ctc gag atg gcc aac ctg cgc ggc ggc gtc   193
Ala Ala Asp Leu Ala Gly Leu Glu Met Ala Asn Leu Arg Gly Gly Val
      50   55   60

ggg ggg ctc ttc cgc gcg agc ccg cgc tac ggg cgc ttg caa gcc acg   241
Gly Gly Leu Phe Arg Ala Ser Pro Arg Tyr Gly Arg Leu Gln Ala Thr
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gcg gca gtt gac cct gaa gat att cca ttg gag aag gtt caa gtt aaa   289
Ala Ala Val Asp Pro Glu Asp Ile Pro Leu Glu Lys Val Gln Val Lys
               85   90   95

tcc tca gga cat gtt ctg cca tat gtt ggc gtt gct tgt ttg ggg gct   337
Ser Ser Gly His Val Leu Pro Tyr Val Gly Val Ala Cys Leu Gly Ala
              100   105   110

att ctg ttt ggt tac cat ctt ggt gtg gtc aat ggc gca ctt gaa tat   385
Ile Leu Phe Gly Tyr His Leu Gly Val Val Asn Gly Ala Leu Glu Tyr
         115   120   125

ctc gcg aag gat ctt ggg att gct gaa aat gct gtc ttg cag ggg tgg   433
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     Val Val Ser Thr Ser Leu Ala Gly Ala Thr Leu Gly Ser Phe Thr Gly
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     ggt tct ttg gca gat aaa ttt ggg cgg aca aga aca ttc atc ctg gat    529
     Gly Ser Leu Ala Asp Lys Phe Gly Arg Thr Arg Thr Phe Ile Leu Asp
                 165                      170                      175

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     gca gtc cca ctt gct cta ggt gca ttc ttg agt gca aca gct caa gat    577
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     gtc tca tct gct ctt gta ccc ctt tac ata tct gag atc tca cca act    673
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     Glu Ile Arg Gly Thr Leu Gly Thr Val Asn Gln Leu Phe Ile Cys Ile
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     gga att ctt gca gct ttg tta gct gga ttg cct ctg gca gga aat cct    769
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     gcc tgg tgg agg aca atg ttt gga att gct gta gtt cca tcc att ctg    817
     Ala Trp Trp Arg Thr Met Phe Gly Ile Ala Val Val Pro Ser Ile Leu
                 260                      265                      270


35  ctg gct gta gga atg gcc ttt tcg cct gaa agc cct cgt tgg cta ttc    865
     Leu Ala Val Gly Met Ala Phe Ser Pro Glu Ser Pro Arg Trp Leu Phe
                 275                      280                      285
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Arg Tyr Trp Lys Val Val Ser Val Gly Ala Ala Leu Phe Leu Phe Gln
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cag ctt gct ggt ata aac gct gtt gta tat tac tct aca tcg gtg ttc   1105
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          405   410   415

tca atg cta ctc cta gca ttg tcc ttc acc tgg aaa gct ctg gca cct   1297
Ser Met Leu Leu Leu Ala Leu Ser Phe Thr Trp Lys Ala Leu Ala Pro
35   420   425   430

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Tyr Ser Gly Thr Leu Ala Val Val Gly Thr Val Leu Tyr Val Leu Ser

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435   440   445

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    450                 455                 460


ttt gcc tcg aga ata agg gcc aag gct gtc gca tta tct cta ggc atg   1441
Phe Ala Ser Arg Ile Arg Ala Lys Ala Val Ala Leu Ser Leu Gly Met
465                 470                 475                 480


cac tgg gta tct aac ttt ttc att ggc ctg tac ttc ctg agt gtc gtg   1489
His Trp Val Ser Asn Phe Phe Ile Gly Leu Tyr Phe Leu Ser Val Val
                485                 490                 495


agc aag ttt ggg atc agc aac gtg tat ctg gga ttt gca tca gta tgt   1537
Ser Lys Phe Gly Ile Ser Asn Val Tyr Leu Gly Phe Ala Ser Val Cys
            500                 505                 510


gcc ctt gca gtt ctg tac ata gct ggg aat gtg gtc gag acc aag ggg   1585
Ala Leu Ala Val Leu Tyr Ile Ala Gly Asn Val Val Glu Thr Lys Gly
        515                 520                 525


aga tca ctt gaa gag att gaa agg gag cta agt gta gca gaa tga       1630
Arg Ser Leu Glu Glu Ile Glu Arg Glu Leu Ser Val Ala Glu
    530                 535                 540
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caaccgagca tccttggacc tggagactct ttctagtttc atgtagtttt agaaataagc 1750


gaacggcaag agtaccaatc ttaggtgact ggtgtgggt tgtgtctgaa ataagtgaat 1810


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Gly Gly Leu Phe Arg Ala Ser Pro Arg Tyr Gly Arg Leu Gln Ala Thr
65   70   75   80

Ala Ala Val Asp Pro Glu Asp Ile Pro Leu Glu Lys Val Gln Val Lys
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Ser Ser Gly His Val Leu Pro Tyr Val Gly Val Ala Cys Leu Gly Ala
            100   105   110

Ile Leu Phe Gly Tyr His Leu Gly Val Val Asn Gly Ala Leu Glu Tyr
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145   150   155   160

Gly Ser Leu Ala Asp Lys Phe Gly Arg Thr Arg Thr Phe Ile Leu Asp
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Ala Val Pro Leu Ala Leu Gly Ala Phe Leu Ser Ala Thr Ala Gln Asp
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5 Ile Arg Thr Met Ile Ile Gly Arg Leu Leu Ala Gly Ile Gly Ile Gly
        195   200   205

Val Ser Ser Ala Leu Val Pro Leu Tyr Ile Ser Glu Ile Ser Pro Thr
        210   215   220

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                260   265   270

Leu Ala Val Gly Met Ala Phe Ser Pro Glu Ser Pro Arg Trp Leu Phe
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Gln Gln Gly Lys Val Thr Gln Ala Glu Leu Ala Val Lys Arg Leu Tyr
        290   295   300

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        305   310   315   320

Gln Ser Ser Ser Glu Ser Glu Ala Gly Trp Phe Asp Leu Phe Ser Lys
                325   330   335

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Arg Tyr Trp Lys Val Val Ser Val Gly Ala Ala Leu Phe Leu Phe Gln
                340   345   350

Gln Leu Ala Gly Ile Asn Ala Val Val Tyr Tyr Ser Thr Ser Val Phe
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Ala Ala Asn Val Phe Gly Thr Met Val Ala Ser Ser Leu Met Asp Lys
385   390   395   400

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                    405   410   415

Ser Met Leu Leu Leu Ala Leu Ser Phe Thr Trp Lys Ala Leu Ala Pro
                420   425   430

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Phe Ala Leu Gly Ala Gly Pro Val Pro Ala Leu Leu Leu Pro Glu Ile
15 450   455   460

Phe Ala Ser Arg Ile Arg Ala Lys Ala Val Ala Leu Ser Leu Gly Met
465   470   475   480

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Ser Lys Phe Gly Ile Ser Asn Val Tyr Leu Gly Phe Ala Ser Val Cys
                500   505   510

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Ala Leu Ala Val Leu Tyr Ile Ala Gly Asn Val Val Glu Thr Lys Gly
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Asp Ala Ala Pro Leu Lys Val Gln Gly Gln Ser Ser Gly Ser Val Leu
             20   25   30

ccc tat gtg ggt gta gct tgt ctg gga gca att tta ttt gga tat cac   144
Pro Tyr Val Gly Val Ala Cys Leu Gly Ala Ile Leu Phe Gly Tyr His
         35   40   45

cta ggg gtg gtg aat ggt gcc ctt gag tac cta gct aag gat ctt gga   192
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     50   55   60

att gcc gag aac act gtt ata caa gga tgg att gtt agc aca gtt ctt   240
Ile Ala Glu Asn Thr Val Ile Gln Gly Trp Ile Val Ser Thr Val Leu
 65   70   75   80

gct ggc gcc ttt gtt ggt tca ttt act ggt gga gtt ctg gct gat aaa   288
Ala Gly Ala Phe Val Gly Ser Phe Thr Gly Gly Val Leu Ala Asp Lys
                 85   90   95

ttt ggc cga aca aag aca ttt ata ttg gat gca att cca ctt tca gtt   336
Phe Gly Arg Thr Lys Thr Phe Ile Leu Asp Ala Ile Pro Leu Ser Val
             100   105   110

ggt gcg ttt cta tgt acc act gcc cag agt gtt cag gct atg atc att   384

Gly Ala Phe Leu Cys Thr Thr Ala Gln Ser Val Gln Ala Met Ile Ile
       115   120   125

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           130   135   140

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    Pro Leu Tyr Ile Ser Glu Ile Ser Pro Thr Glu Ile Arg Gly Thr Leu
10 145   150   155   160

    gga acg gtc aat cag cta ttc att tgc att gga att ctt gtt gca ctc   528
    Gly Thr Val Asn Gln Leu Phe Ile Cys Ile Gly Ile Leu Val Ala Leu
                   165   170   175

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                   180   185   190

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    Phe Gly Leu Ala Leu Ile Pro Ser Val Leu Leu Ala Ile Gly Met Ala
           195   200   205

    ttt tct cct gaa agt cct cgg tgg ctc tat cag caa ggg aga att tct   672
25 Phe Ser Pro Glu Ser Pro Arg Trp Leu Tyr Gln Gln Gly Arg Ile Ser
           210   215   220

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30 225   230   235   240

    gag gtt atg ggt gac ttg gaa gct tct gcc cgg ggt tct tca gaa cca   768
    Glu Val Met Gly Asp Leu Glu Ala Ser Ala Arg Gly Ser Ser Glu Pro
                   245   250   255

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    gat gct ggg tgg ctt gat cta ttt agt agc cgt tat agg aaa gtt gtt   816
    Asp Ala Gly Trp Leu Asp Leu Phe Ser Ser Arg Tyr Arg Lys Val Val
                   260   265   270

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           275                 280                 285

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   gct gtt gtc tat tat tcc act gcc gtg ttc cgg agt gct gga att aca    912
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           290                 295                 300

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   Ser Asp Val Ala Ala Ser Ala Leu Val Gly Ala Ala Asn Val Phe Gly
   305                 310                 315                 320

   aca acg gtg gca tcc tct ttg atg gac aaa caa gga agg aag agt ctc   1008
15 Thr Thr Val Ala Ser Ser Leu Met Asp Lys Gln Gly Arg Lys Ser Leu
                   325                 330                 335

   ttg ctc ata agc tat act gga atg gct gca tca atg atg ttg ctt tcc   1056
   Leu Leu Ile Ser Tyr Thr Gly Met Ala Ala Ser Met Met Leu Leu Ser
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   gtt ctt ggt act gtc ctc tat gtg ttg tcc ttt tca ctt ggt gct ggt   1152
   Val Leu Gly Thr Val Leu Tyr Val Leu Ser Phe Ser Leu Gly Ala Gly
           370                 375                 380

30 cct gtg cct gct ctt cta ctt cca gaa ata ttt gct tcc aga att agg   1200
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                   405                 410                 415

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5 Thr Val Tyr Met Gly Phe Ala Leu Ser Cys Leu Val Ala Val Val Tyr
            435   440   445

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Ile Thr Gly Asn Val Val Glu Thr Lys Gly Arg Ser Leu Glu Glu Ile
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Gly Thr Val Asn Gln Leu Phe Ile Cys Ile Gly Ile Leu Val Ala Leu
                165   170   175
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Val Val Gly Leu Pro Leu Ser Gly Asn Pro Ser Trp Trp Arg Thr Met
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Phe Gly Leu Ala Leu Ile Pro Ser Val Leu Leu Ala Ile Gly Met Ala
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Phe Ser Pro Glu Ser Pro Arg Trp Leu Tyr Gln Gln Gly Arg Ile Ser
        210   215   220

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Glu Val Met Gly Asp Leu Glu Ala Ser Ala Arg Gly Ser Ser Glu Pro

                           245   250   255

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10   290   295   300

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     Val Leu Gly Thr Val Leu Tyr Val Leu Ser Phe Ser Leu Gly Ala Gly
25   370   375   380

     Pro Val Pro Ala Leu Leu Leu Pro Glu Ile Phe Ala Ser Arg Ile Arg
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30 Ala Lys Ala Val Ala Leu Ser Leu Gly Val His Trp Ile Met Asn Phe
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     Phe Ile Gly Leu Tyr Phe Leu Ser Ile Val Thr Lys Phe Gly Ile Ser
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     Thr Val Tyr Met Gly Phe Ala Leu Ser Cys Leu Val Ala Val Val Tyr
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        1   5   10   15

        cag aac cgt aga gtg gct ggg ctt gct ggg ttg aaa ggg tta agc tca   156
        Gln Asn Arg Arg Val Ala Gly Leu Ala Gly Leu Lys Gly Leu Ser Ser
35   20   25   30

        atc cgt tcc aat aat cta agt ttt gtg aat gtt aat gac aat aat tat   204
        Ile Arg Ser Asn Asn Leu Ser Phe Val Asn Val Asn Asp Asn Asn Tyr

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                35                       40                       45


        aag tct aat ccc tgt aaa ttg agt tgt ggg tcc ctt tcg atg ggt gct    252
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  5       50                   55                   60


        gga ttt gca aga ttg ggt ctt gat cat gtc atg aag tcc tca ccc aag    300
        Gly Phe Ala Arg Leu Gly Leu Asp His Val Met Lys Ser Ser Pro Lys
          65                   70                   75                   80
  10
        tac aga tca gtc aag gct caa gct gct tct gga gga gat ctt gaa gat    348
        Tyr Arg Ser Val Lys Ala Gln Ala Ala Ser Gly Gly Asp Leu Glu Asp
                          85                   90                   95


  15 gcc act cct gtc aaa tat caa ggc aaa tct tct gca tca gtg ttg ccg     396
     Ala Thr Pro Val Lys Tyr Gln Gly Lys Ser Ser Ala Ser Val Leu Pro
                       100                  105                  110


        tat gtt ggt gtt gct tgt ttg gga gct att ttg ttt gga tat cac ctt    444
  20 Tyr Val Gly Val Ala Cys Leu Gly Ala Ile Leu Phe Gly Tyr His Leu
                    115                  120                  125


        ggt gtg gta aat gga gct ctt gac tac cta tct gcg gat tta gct att    492
        Gly Val Val Asn Gly Ala Leu Asp Tyr Leu Ser Ala Asp Leu Ala Ile
  25     130                  135                  140


        gct ggc aat act gtt tta caa gga tgg gtt gtg agc ata tta ctt gct    540
        Ala Gly Asn Thr Val Leu Gln Gly Trp Val Val Ser Ile Leu Leu Ala
        145                  150                  155                  160
  30
        gga gcg act gta ggt tca ttt act ggc gga tct ttg gct gat aag ttt    588
        Gly Ala Thr Val Gly Ser Phe Thr Gly Gly Ser Leu Ala Asp Lys Phe
                       165                  170                  175


  35 gga agg aca aag acc ttc cag tta gat gca att cct ctt gca ata gga     636
     Gly Arg Thr Lys Thr Phe Gln Leu Asp Ala Ile Pro Leu Ala Ile Gly
                    180                  185                  190
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            195                 200                 205
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            210                 215                 220
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    tta tac att tct gag att tcg cca act gaa att cga ggt gca ctt ggt    780
10  Leu Tyr Ile Ser Glu Ile Ser Pro Thr Glu Ile Arg Gly Ala Leu Gly
        225                 230                 235             240
```

```
    tct gtc aac cag ctt ttt ata tgc att ggt att ctt gcg gct ttg gtt    828
    Ser Val Asn Gln Leu Phe Ile Cys Ile Gly Ile Leu Ala Ala Leu Val
15                      245                 250                 255
```

```
    gct gga ttg cct tta gca gga aac cct ttg tgg tgg agg aca atg ttt    876
    Ala Gly Leu Pro Leu Ala Gly Asn Pro Leu Trp Trp Arg Thr Met Phe
                260                 265                 270
20
    ggt att gca aca gtt ccc tct gtt ctc ttg gct ctt ggg atg ggc ttc    924
    Gly Ile Ala Thr Val Pro Ser Val Leu Leu Ala Leu Gly Met Gly Phe
            275                 280                 285
```

```
25  tgt cca gaa agc cct agg tgg ctt ttt cag caa gga aaa att gtt gaa    972
    Cys Pro Glu Ser Pro Arg Trp Leu Phe Gln Gln Gly Lys Ile Val Glu
            290                 295                 300
```

```
    gca gaa aag gcc gta gca gcc ctc tat gga aaa gaa agg gtt ccg gag   1020
30  Ala Glu Lys Ala Val Ala Ala Leu Tyr Gly Lys Glu Arg Val Pro Glu
        305                 310                 315             320
```

```
    gtg att aat gat ttg aga gca tct gtt caa ggt tct tct gaa cca gaa   1068
    Val Ile Asn Asp Leu Arg Ala Ser Val Gln Gly Ser Ser Glu Pro Glu
35                      325                 330                 335
```

```
    gct ggc tgg ttt gat ctg ttc agt agc cgc tac agg aaa gtg gta agt   1116
    Ala Gly Trp Phe Asp Leu Phe Ser Ser Arg Tyr Arg Lys Val Val Ser
```

18

340   345   350

gtt ggt gct gca ctt ttc ttg ttc cag caa atg gca gga atc aat gct   1164
Val Gly Ala Ala Leu Phe Leu Phe Gln Gln Met Ala Gly Ile Asn Ala
5   355   360   365

gtt gta tat tac tcc aca tct gta ttc cga agt gct gga att gca tca   1212
Val Val Tyr Tyr Ser Thr Ser Val Phe Arg Ser Ala Gly Ile Ala Ser
         370   375   380
10
gat gtt gcc gct agt gcc ctt gtt gga gca tca aat gtt att ggc act   1260
Asp Val Ala Ala Ser Ala Leu Val Gly Ala Ser Asn Val Ile Gly Thr
385   390   395   400

15 gct gtc gcc tct tct tta atg gac aag caa gga aga aag agc cta ctg   1308
Ala Val Ala Ser Ser Leu Met Asp Lys Gln Gly Arg Lys Ser Leu Leu
              405   410   415

atg aca agt ttc tca gga atg gct gcc tca atg ttg ttg ctg tca cta   1356
20 Met Thr Ser Phe Ser Gly Met Ala Ala Ser Met Leu Leu Leu Ser Leu
              420   425   430

tcg ttc aca tgg aag gct cta gca cct tac tcg ggc aca ctt gcc gtt   1404
Ser Phe Thr Trp Lys Ala Leu Ala Pro Tyr Ser Gly Thr Leu Ala Val
25   435   440   445

gtg gga act gtt tta tat gtc ctt tcc ttt tca ctt ggc gct ggt cct   1452
Val Gly Thr Val Leu Tyr Val Leu Ser Phe Ser Leu Gly Ala Gly Pro
         450   455   460
30
gtt cct gct ctt cta ctt cca gag atc ttc gca tcc aga atc cga gca   1500
Val Pro Ala Leu Leu Leu Pro Glu Ile Phe Ala Ser Arg Ile Arg Ala
465   470   475   480

35 aaa gca gtg gct ttg tca ctg gga atg cat tgg gcg tca aac ttc gta   1548
Lys Ala Val Ala Leu Ser Leu Gly Met His Trp Ala Ser Asn Phe Val
              485   490   495

19

```
    att ggc ctt tat ttc tta agt gtg gtg acc aag ttt gga atc agc aaa   1596
    Ile Gly Leu Tyr Phe Leu Ser Val Val Thr Lys Phe Gly Ile Ser Lys
                500               505               510


  5 gtg tat ttg ggg ttc gcg tca gtg tgt gtg ctt gcc gtg ttg tac ata  1644
    Val Tyr Leu Gly Phe Ala Ser Val Cys Val Leu Ala Val Leu Tyr Ile
                515               520               525


    gct ggt aac gtt gtt gaa aca aaa gga cga tca ctt gag gaa ata gag   1692
 10 Ala Gly Asn Val Val Glu Thr Lys Gly Arg Ser Leu Glu Glu Ile Glu
                530               535               540


    ctt gct cta agt cca gct gtt tag tttggaggat acagtttttc tgttttttg   1746
    Leu Ala Leu Ser Pro Ala Val
 15 545               550


    atctatagag aattatgtta ataattcccg gatttaggag tttgatgcta gttttcatgc 1806


    tcgttggcac attcatgtcc agacagttgt actatcaatg tcagaaattc ctcgtgcc   1864
 20


    <210> 6
    <211> 551
    <212> PRT
 25 <213> Spinacia oleracea


    <400> 6
    Met Gln Ala Ser Thr Phe Met Val Lys Gly Asn Leu Gly Phe Glu Val
       1               5                10               15
 30
    Gln Asn Arg Arg Val Ala Gly Leu Ala Gly Leu Lys Gly Leu Ser Ser
                20               25               30


    Ile Arg Ser Asn Asn Leu Ser Phe Val Asn Val Asn Asp Asn Asn Tyr
 35          35               40               45


    Lys Ser Asn Pro Cys Lys Leu Ser Cys Gly Ser Leu Ser Met Gly Ala
          50               55               60
```

```
         Gly Phe Ala Arg Leu Gly Leu Asp His Val Met Lys Ser Ser Pro Lys
         65              70              75              80


  5 Tyr Arg Ser Val Lys Ala Gln Ala Ala Ser Gly Gly Asp Leu Glu Asp
                         85              90              95


     Ala Thr Pro Val Lys Tyr Gln Gly Lys Ser Ser Ala Ser Val Leu Pro
                     100             105             110
 10
     Tyr Val Gly Val Ala Cys Leu Gly Ala Ile Leu Phe Gly Tyr His Leu
                 115             120             125


     Gly Val Val Asn Gly Ala Leu Asp Tyr Leu Ser Ala Asp Leu Ala Ile
 15      130             135             140


     Ala Gly Asn Thr Val Leu Gln Gly Trp Val Val Ser Ile Leu Leu Ala
     145             150             155             160


 20 Gly Ala Thr Val Gly Ser Phe Thr Gly Gly Ser Leu Ala Asp Lys Phe
                 165             170             175


     Gly Arg Thr Lys Thr Phe Gln Leu Asp Ala Ile Pro Leu Ala Ile Gly
                 180             185             190
 25
     Ala Tyr Leu Cys Ala Thr Ala Gln Asn Val Gln Ile Met Met Ile Gly
             195             200             205


     Arg Leu Leu Cys Gly Ile Gly Ile Gly Ile Ser Ser Ala Leu Val Pro
 30      210             215             220


     Leu Tyr Ile Ser Glu Ile Ser Pro Thr Glu Ile Arg Gly Ala Leu Gly
     225             230             235             240


 35 Ser Val Asn Gln Leu Phe Ile Cys Ile Gly Ile Leu Ala Ala Leu Val
                 245             250             255


     Ala Gly Leu Pro Leu Ala Gly Asn Pro Leu Trp Trp Arg Thr Met Phe
```

21

260   265   270

Gly Ile Ala Thr Val Pro Ser Val Leu Leu Ala Leu Gly Met Gly Phe
        275   280   285

5

Cys Pro Glu Ser Pro Arg Trp Leu Phe Gln Gln Gly Lys Ile Val Glu
        290   295   300

Ala Glu Lys Ala Val Ala Ala Leu Tyr Gly Lys Glu Arg Val Pro Glu
10 305   310   315   320

Val Ile Asn Asp Leu Arg Ala Ser Val Gln Gly Ser Ser Glu Pro Glu
                325   330   335

15 Ala Gly Trp Phe Asp Leu Phe Ser Ser Arg Tyr Arg Lys Val Val Ser
                340   345   350

Val Gly Ala Ala Leu Phe Leu Phe Gln Gln Met Ala Gly Ile Asn Ala
                355   360   365

20

Val Val Tyr Tyr Ser Thr Ser Val Phe Arg Ser Ala Gly Ile Ala Ser
        370   375   380

Asp Val Ala Ala Ser Ala Leu Val Gly Ala Ser Asn Val Ile Gly Thr
25 385   390   395   400

Ala Val Ala Ser Ser Leu Met Asp Lys Gln Gly Arg Lys Ser Leu Leu
                405   410   415

30 Met Thr Ser Phe Ser Gly Met Ala Ala Ser Met Leu Leu Leu Ser Leu
                420   425   430

Ser Phe Thr Trp Lys Ala Leu Ala Pro Tyr Ser Gly Thr Leu Ala Val
                435   440   445

35

Val Gly Thr Val Leu Tyr Val Leu Ser Phe Ser Leu Gly Ala Gly Pro
        450   455   460

22

```
   Val Pro Ala Leu Leu Leu Pro Glu Ile Phe Ala Ser Arg Ile Arg Ala
   465             470             475             480


   Lys Ala Val Ala Leu Ser Leu Gly Met His Trp Ala Ser Asn Phe Val
 5             485             490             495


   Ile Gly Leu Tyr Phe Leu Ser Val Val Thr Lys Phe Gly Ile Ser Lys
              500             505             510

10 Val Tyr Leu Gly Phe Ala Ser Val Cys Val Leu Ala Val Leu Tyr Ile
              515             520             525


   Ala Gly Asn Val Val Glu Thr Lys Gly Arg Ser Leu Glu Glu Ile Glu
              530             535             540

15
   Leu Ala Leu Ser Pro Ala Val
   545             550
```